

WHAT IS CLAIMED IS:

1. A method for detecting a component of a substance on a front surface of a substrate, comprising the steps of:

transferring the substrate with the substance thereon into a vaporizing section,

heating the substance in the vaporizing section so that the component is vaporized from the substance in the vaporizing section,

feeding the component vaporized from the substance in the vaporizing section to a detecting section, and

detecting the vaporized component in the detecting section.

2. A method according to claim 1, wherein in the step of feeding the component vaporized in the vaporizing section, a gaseous matter other than the vaporized component is supplied toward the substance in the vaporizing section to be fed with the vaporized component toward the detecting section.

3. A method according to claim 2, wherein the gaseous matter is supplied from a radially outer side with respect to the substance toward the substance in a radially inward direction of the substance as seen in a stacking direction in which the substance and the substrate are stacked.

4. A method according to claim 2, wherein the gaseous matter is prevented from passing through the

substrate in a stacking direction in which the substance and the substrate are stacked.

5. A method according to claim 2, wherein the gaseous matter to be fed with the vaporized component from the vaporizing section toward the detecting section is prevented from being supplied to a reverse surface of the substrate opposite to the front surface in a stacking direction in which the substance and the substrate are stacked.

6. A method according to claim 1, wherein in the step of heating the substance, the substance is irradiated by a radiant heat energy to be heated so that the substance is prevented from being heated through the substrate in a stacking direction in which the substance and the substrate are stacked.

7. A method according to claim 1, wherein in the step of heating the substance, a reverse surface of the substrate opposite to the front surface in a stacking direction in which the substance and the substrate are stacked is heated by the heat energy with a contact thermal conduction on the reverse surface so the substance is heated from the reverse surface through the substrate in the stacking direction.

8. A method according to claim 1, wherein in the step of heating the substance, the substance is irradiated by a radiant heat energy to be heated so that the substance is prevented from being heated through the substrate in a stacking direction in which

the substance and the substrate are stacked, and another heat energy is applied to a reverse surface of the substrate opposite to the front surface in the stacking direction so that the substance is heated from the reverse surface through the substrate in the stacking direction.

9. A method according to claim 1, further comprising the step of changing a distance between the substrate and a heat source for generating a radiant heat energy to heat the substance so that an amount of the radiant heat energy per unit time period for heating the substance is changed.

10. A method according to claim 9, wherein the step of changing the distance is performed before heating the substance.

11. A method according to claim 9, wherein the step of changing the distance is performed while heating the substance.

12. A method according to claim 1, wherein in the step of detecting the vaporized component, a gaseous pressure in the detecting section is less than the atmospheric pressure.

13. A method according to claim 1, wherein in the step of heating the substance, a gaseous pressure in the vaporizing section is less than the atmospheric pressure.

14. A method according to claim 1, wherein in the step of feeding the component, a gaseous pressure in

the detecting section is less than a gaseous pressure in the vaporizing section.

15. A method according to claim 1, further comprising the step of removing the substrate from the vaporizing section after the step of heating the substance, and transferring another substrate with another substance thereon into the vaporizing section.

16. An apparatus for detecting a component of a substance on a front surface of a substrate, comprising,
a vaporizing section including a substrate holder adapted to hold thereon the substrate with the substance thereon,

a heater for generating a heat energy to heat the substance on the substrate held on the substrate holder so that the component is vaporized from the substance held on the substrate holder, and

a detector for detecting the vaporized component.

17. An apparatus according to claim 16, wherein the vaporizing section includes an inlet port opening to supply a gaseous matter other than the vaporized component for the substance held on the substrate holder so that the gaseous matter is fed with the vaporized component toward the detector.

18. An apparatus according to claim 17, wherein the inlet port is arranged to open at a radially outer side with respect to the substance on the substrate held on the substrate holder as seen in a stacking

direction in which the substance and the substrate are stacked so that the gaseous matter is supplied toward the substance on the substrate held on the substrate holder in a radially inward direction of the substance as seen in the stacking direction.

19. An apparatus according to claim 17, wherein the inlet port is arranged to prevent the gaseous matter from passing through the substrate held on the substrate holder in a stacking direction in which the substance and the substrate are stacked.

20. An apparatus according to claim 17, wherein the inlet port is arranged to prevent the gaseous matter to be fed with the vaporized component toward the detector from being supplied to a reverse surface of the substrate held on the substrate holder opposite to the front surface in a stacking direction in which the substance and the substrate are stacked.

21. An apparatus according to claim 17, wherein the inlet port is capable of having an opening area sufficiently large for introducing the substrate from an outside of the apparatus onto the substrate holder through the opening area.

22. An apparatus according to claim 17, wherein the inlet port is arranged to surround the front surface as seen in a stacking direction in which the substance and the substrate are stacked

23. An apparatus according to claim 22, wherein the inlet ports includes at least three sub-inlet ports

arranged to surround the front surface as seen in the stacking direction.

24. An apparatus according to claim 22, wherein the vaporizing section includes an outlet port through which the vaporized component is allowed to flow toward the detector, and the outlet port is surrounded by the inlet port as seen in the stacking direction.

25. An apparatus according to claim 16, wherein the heater is capable of generating a radiant heat energy as the heat energy by which radiant heat energy the substance is irradiated to be heated so that the substance is prevented from being heated through the substrate in a stacking direction in which the substance and the substrate are stacked.

26. An apparatus according to claim 16, wherein the heater is arranged to be contactable with a reverse surface area of the substrate held on the substrate holder opposite to the substance on the front surface in a stacking direction in which the substance and the substrate are stacked so that the substance is heated from the reverse surface area through the substrate in the stacking direction with a contact thermal conduction between the heater and the reverse surface area.

27. An apparatus according to claim 16, wherein the heater is capable of generating a radiant heat energy as the heat energy by which radiant heat energy the substance is irradiated to be heated so that the

substance is prevented from being heated through the substrate in a stacking direction in which the substance and the substrate are stacked, and another heat energy to be applied to a reverse surface of the substrate held on the substrate holder opposite to the front surface in the stacking direction so that the substance is heated from the reverse surface through the substrate in the stacking direction.

28. An apparatus according to claim 16, wherein at least one of the substrate holder and the heater capable of generating a radiant heat energy as the heat energy to heat the substance is movable to change a distance between the substrate and the heater so that an amount of the radiant heat energy per unit time period for heating the substance from the heater is changeable.

29. An apparatus according to claim 28, wherein the distance is changeable before heating the substance.

30. An apparatus according to claim 28, wherein the distance is changeable while heating the substance.

31. An apparatus according to claim 16, wherein the detector includes an exhausting device arranged at a downstream side in a flow direction of the vaporized component with respect to a position where the vaporized component is detected by the detector, to discharge the vaporized component to an outside of the apparatus in such a manner that a gaseous pressure at the position is less than the atmospheric pressure.

32. An apparatus according to claim 16, wherein the detector includes an exhausting device arranged at a downstream side in a flow direction of the vaporized component with respect to a position where the vaporized component is detected by the detector, to discharge the vaporized component to an outside of the apparatus in such a manner that a gaseous pressure on the substance on the substrate holder is less than the atmospheric pressure.

33. An apparatus according to claim 16, wherein the detector includes an exhausting device arranged at a downstream side in a flow direction of the vaporized component with respect to a position where the vaporized component is detected by the detector, to discharge the vaporized component to an outside of the apparatus in such a manner that a gaseous pressure at the position is less than a gaseous pressure on the substance on the substrate holder.

34. An apparatus according to claim 16, wherein the vaporizing section includes an outlet port through which the vaporized component is allowed to flow toward the detector, and the heater is capable of generating the heat energy at an area surrounding the outlet port as seen in a flow direction through the outlet port.

35. An apparatus according to claim 16, wherein the vaporizing section includes a transfer member contactable with the substrate and movable with respect to the substrate holder so that the substrate supported

by the transfer device is mounted onto the substrate holder and removed from the substrate holder.

36. An apparatus according to claim 35, wherein the transfer member is capable of supporting thereon two of the substrates so that a movement of one of the substrates toward the substrate holder and a movement of the other one of the substrates from the substrate holder occur simultaneously.

37. An apparatus according to claim 35, wherein the transfer member includes a hole and a projection to form a clearance between the hole and projection in such a manner that the clearance is capable of receiving a part of the substrate to be compressed between the hole and projection.